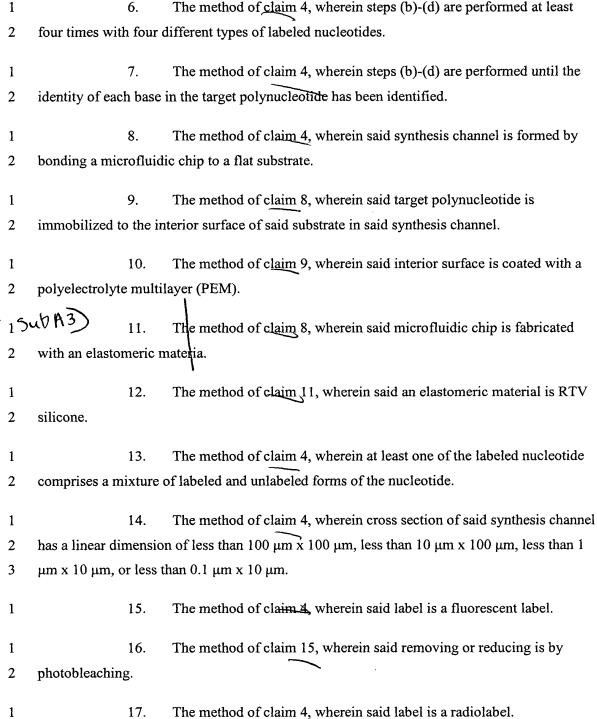


channel to remove unincorporated first or further labeled nucleotide.

1 2



The method of claim 17, wherein said removing or reducing is by

18.

chemical or enzymatic release of the label.

1	19.	The method of claim 4, wherein said label is a mass-spectrometric		
2	label.			
1	20.	The method of claim 19, wherein said removing or reducing is by		
2	chemical or enzyma	tic release of the label.		
1	21.	The method of claim 1, wherein said signal is a non-optical signal.		
1	22.	The method of claim 21, wherein said non-optical signal is		
2	pyrophosphate release.			
1	23.	The method of claim 22, wherein said pyrophosphate release is		
2	detected with mass	spectrometry.		
1	24.	The method of claim 22, wherein said pyrophosphate release is		
2	detected with an ena	cymatic reaction.		
1	25.	The method of claim 24, wherein said enzymatic reaction is a redox		
2	enzymatic reaction.			
1	5 ub A4 > 26.	A method of analyzing a target polynucleotide comprising:		
2		(a) pretreating the surface of a substrate to create surface chemistry		
3	that facilitates polyr	that facilitates polynucleotide attachment and sequence analysis;		
4		(b) providing a primed target polynucleotide attached to a surface of a		
5	substrate;			
6		(c) providing a abeled first nucleotides to the attached target		
7	polynucleotide under conditions whereby the labeled first nucleotide attaches to the primer, if			
8	a complementary nucleotide is present to serve as template in the target polynucleotide;			
9		(d) determining presence or absence of a signal, the presence of a		
10	signal indicating that the labeled first nucleotide was incorporated into the primer, and hence			
11	the identity of the complementary base that served as a template in the target polynucleotide;			
12	and			
13		(e) repeating steps (c) (d) with a labeled further nucleotide, the same		
14	or different from the	or different from the first labeled nucleotide, whereby the labeled further nucleotide attaches		
15	to the primer or a nucleotide previously incorporated into the primer.			

1

35.

Ţ		27.	The method of claim 26, wherein said substrate is glass and said
2	surface is coated with a polyelectrolyte multilayer (PEM).		
1		28.	The method of claim 27, wherein said PEM is terminated with a
2	polyanion.		
1		29.	The method of claim 28, wherein said polyanion bears pendant
2	carboxylic acid groups.		
1		30.	The method of claim 26, wherein said target polynucleotide is
2	biotinylated, and said surface is coated with streptavidin.		
1		31.	The method of claim 30, wherein said surface is coated with biotin
2	prior to coatin	g with	streptavidin.
1		32 .	The method of claim 31, wherein said surface is coated with a
2	polyelectrolyte multilayer (PEM) terminated with carboxylic acid groups prior to attachmen		
3	of biotin.		
1		33.	The method of claim 32, wherein said surface is pretreated with RCA
2	solution prior to coating with said PEM.		
1	Sub AB	34.	A method of analyzing a target polynucleotide comprising:
2			(a) providing a primed target polynucleotide;
3			(b) providing a first nucleotide under conditions whereby the first
4	nucleotide atta	iches to	o the prime, if a complementary nucleotide is present to serve as
5	template in the	e targe	t polynucleotide; wherein a fraction of said first nucleotide is labeled.
6			(c) determining presence or absence of a signal from the primer, the
7	presence of a signal indicating the first nucleotide was incorporated into the primer, and		
8	hence the identity of the complementary base that served as a template in the target		
9	polynucleotide	e; and	
10			(d) repeating steps (b)-(c) with a further nucleotide, the same or
11	different from the first nucleotide, whereby the further nucleotide attaches to the primer or a		
12	nucleotide previously incorporated into the primer; wherein a fraction of said further		
13	nucleotide is 1	abeled	

The method of claim 34, wherein said label is a fluorescent label.

The method of claim 35, wherein said removing or reducing is by

1

2

1

2

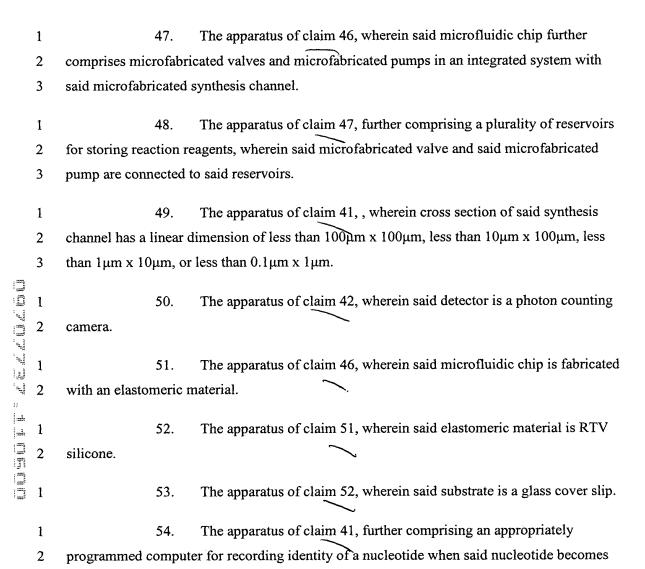
46.

bonding a microfluidic chip to a substrate.

36.

photobleaching.

The apparatus of claim 41, wherein said synthesis channel is formed by



linked to a synthesis channel.